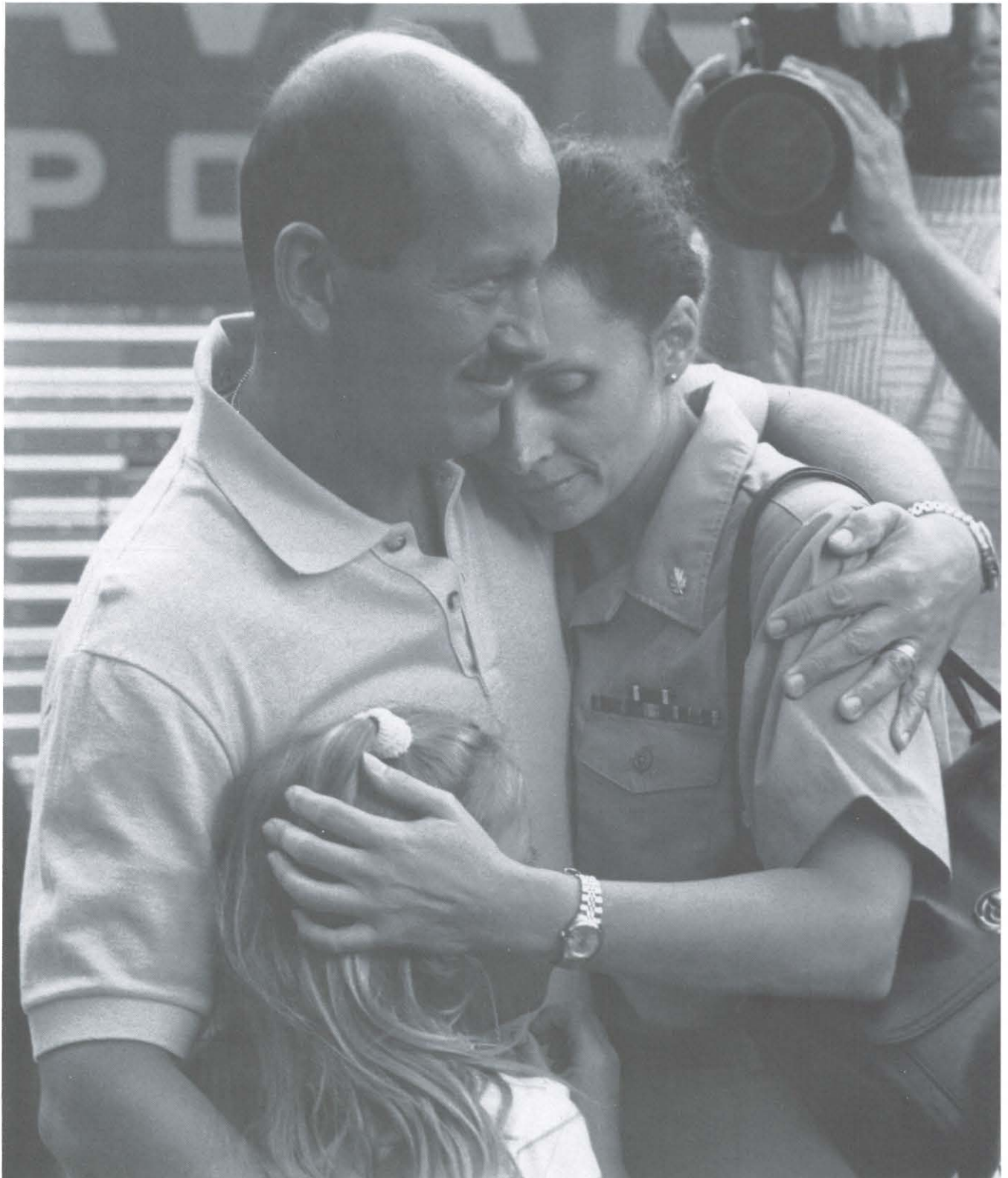


NAVY MEDICINE

September-October 1990



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COVER: CDR Barbara Vernoski, NC, bids goodbye to her family at the National Naval Medical Center, Bethesda, MD, as she prepares to ship out on USNS *Comfort* for the Persian Gulf. Story on page 14. Photo by HM2 David VanGelder, NSHS, Bethesda, MD.

The Bright Spot in Desert Shield

The contingency requirements that the Navy Medical Department responded to during August and into September showed the world what Navy medicine is all about. Although Operation Desert Shield is a triservice effort, the Navy and Marine Corps were first on the scene, and the bulk of the medical resources have been Navy.

As medical personnel packed their bags to join the forces massing in the Middle East, a host of support personnel were seeing to the nuts and bolts of deployment—writing orders, checking immunization records, requisitioning supplies, and coordinating transportation. Much of the transportation was provided by the Military Sealift Command, which also deserves kudos for the timely and efficient support provided. The activation of the hospital ships was just one example of the efficiency and dedication of the Navy health care team, the Navy, and the Military Sealift Command. The rapid response to contingency requirements throughout the Navy Medical Department was impressive.

I want to thank and applaud all of you who worked toward getting in place the people and supplies needed to ensure our fighting forces would have the best possible medical care available. Our people are vital to a ready force both in peace and in crisis, and we have done our jobs diligently and well.

In the aftermath of activation, the truth of the poet who said "they also serve who only stand and wait" is evident. The personnel remaining in our fixed medical treatment facilities have continued to meet the day-to-day requirements of our beneficiaries after significant staffing losses. With very little notice, they have pulled together to meet heavy workloads while their colleagues deploy. Throughout the country, our MTFs have done a magnificent job of keeping their beneficiaries informed about how the contingency requirements will affect the services available to them. And our beneficiaries, the families and retirees who have met this crisis with understanding and support, have illustrated what is meant by the term "One Navy."

Another integral part of the One Navy concept is composed of reservists, many of whom had volunteered for duty even before the President authorized a recall. A significant number of those recalled will be medical personnel, and they will help alleviate the shortfalls at our treatment facilities. To those of you reading this who are part of that recall—welcome, and thank you for your support. I recognize the sacrifices an extended period of active duty can cause reservists and appreciate what you are doing.

I must hasten to salute as well the hard work and dedication of the civilian employees of Navy medicine's family. I know that you have put forth extraordinary effort to see that the many details of mobilization are not neglected. I am grateful to each of you.

Whether ashore or deployed, this is what Navy medicine is all about, and what all of us signed up for. It is that special sense of mission, of caring for the U.S. servicemen and women who have sworn to serve their country, that differentiates us from our civilian counterparts. We sail with the fleet and serve with the Fleet Marine Force. In the midst of Marine deployments, I received a message from LGEN Carl E. Mundy, USMC, FMFLANT. He related that a bright spot in Desert Shield is Navy medicine and passed on his appreciation. I am pleased to relay his appreciation to all of you.

As the crisis continues, I am confident that the spirit of cooperation and teamwork I have witnessed throughout my naval career, and have seen tenfold in the past months, will allow us to provide appropriate care for our beneficiaries at home and to maintain a ready posture in support of Operation Desert Shield.

I hope that our services will not be needed for combat casualties. But if they are, we are standing by—on station—ready to assist.

I have never been prouder. CHARLIE GOLF ONE.

VADM James A. Zimble, MC

Don't Myth—Apply TQM

LCDR T.M. McCombs, MC, USNR
Kevin B. Kreitman, M.S.

This article raises the possibility that Total Quality Management (TQM) can be enthusiastically implemented by dedicated sailors and fail to produce the results anticipated. Popular misconceptions about TQM are explored in the context of commonly held "myth-beliefs." Emphasis is directed to establishing the TQM culture within DOD, and prerequisite changes in evaluation tools and incentives are offered.

Time: 1991

Place: Navy Hospital Command Conference Room,
Bugsville, USA

Background: TQM officially "kicked off" here
18 months ago.

The TQM officer has been strongly supported by command. Quality management boards have met weekly throughout the hospital. All hands have received TQM in-service training. Pareto charts and fish diagrams cover the bulkheads in the administrative spaces. TQM vocabulary hums around the table at every staff meeting.

Despite the initial enthusiasm and commitment to TQM, the anticipated results have yet to be manifested. Patient flow from initial presentation to discharge is still plagued with a number of problems targeted months ago. Staff morale remained high during the first 6 months of implementation, but has declined steadily to new lows, matching the trend in patient satisfaction surveys.

The Executive Steering Group is meeting to review these most recent surveys. The following case was selected:

A 56-year-old white male presented to the emergency department with the chief complaint of shortness of breath. While triaged swiftly and appropriately, he was placed behind a drawn curtain, awaiting aerosolized medication, which was delayed for over half an hour. During this time the patient was unsupervised and experienced significant worsening of his condition. His stabilization was delayed while the one pharmacy technician who could prepare aminophylline for IV infusion was at chow, carrying a dead beeper. Portable X-ray was in the maintenance shop, and

the patient waited over an hour for his basic X-ray studies. His initial laboratory studies were drawn into inappropriate tubes with clumsy phlebotomy technique, resulting in initial underdosing of aminophylline and treatment for an artifactual hyperkalemia. The remainder of his hospital stay was plagued with similar mishaps, each administered by hardworking skilled caregivers who found themselves consistently overworked and underresourced. Complications attributable to these mishaps extended his stay by several days, costing the hospital thousands of dollars.

The commanding officer solicits input from his Executive Steering Group and receives the following:

Command Master Chief: "Skipper, these people are just screwing up. We need to hold their feet to the fire."

Lab Officer: "Sir, this was not the only emergent patient that night. We had eight orders for stat lab in 20 minutes and I think half of them could have waited."

Nursing Director: "Sir, our emergency room is overutilized with routine and frivolous visits. My one nurse was too busy with triage to supervise this patient."

Executive Officer: "Master Chief, you've passed the blame on to the corpsmen. Lab, you have blamed the doctors. Nursing, you claim our patients—our own customers—are at fault. We are looking at the same problems we had 18 months ago; the very problems that TQM was going to fix. TQM Coordinator?"

The TQM coordinator is holding his head in his hands, and remembering horror stories of the BOQ on Diego Garcia.

Could This Happen to Us?

Charles Leader, a TQM management consultant, observes that "some recently initiated TQM programs will succeed, but many others will be expensive—and avoidable—failures. The unsuccessful will attempt to add quality to current processes rather than fundamentally changing processes to build quality in from the beginning." (1)

The intent of this article is to call attention to the likelihood of a TQM failure: not from a lack of dedication or

commitment, but from misunderstandings of the essentials of TQM culture. In order to manifest the CNO's directive (2) and avoid the costly failure of this program, the authors will examine these key misunderstandings by presenting them as (commonly held) TQM myths.

TQM Myths

1. "If I have a TQM program, then I have TQM."

The authors submit that *TQM is a culture*: a culture which totally harnesses grassroots input for the improvement of quality. While management support and direction is essential to the success of TQM, the knowledge for how to improve exists in those who are performing the work.(3) Pareto charts, fish diagrams, scatter diagrams, quality circles, Taguchi methods, histograms, and statistical process controls do not create the power of TQM. They only harness and direct it. Organizations which rely on the glitter of outward forms alone are in a position analogous to that of a ship's captain ordering navigational changes to a vessel dead in the water.

A recent example of this can be found in the automotive industry. TQM was introduced into two GM plants in California, which had previously been beset by quality problems, rampant absenteeism, and union difficulties. Both plants installed the same control systems on the shop floor, provided similar training for their managers as well as rank and file employees, and implemented the small team production process, where team members were given the authority to shut down the line as necessary to remedy quality problems.

The difference between the plants is that the Fremont plant (jointly owned by GM and Toyota) followed through on the cultural changes: creating an environment where *quality really did matter more than anything else*, where *workers were not afraid* to stop the line when necessary, were given full voice in quality improvement, and were provided with cross-training and job security. Quality of the automobiles improved dramatically, along with productivity and worker morale.

In Van Nuys, the trappings were provided, but not the followthrough. It was more important to the Van Nuys management to keep the assembly line moving than to correct quality problems or cross-train workers to do each others' jobs. Although team meetings (quality circles) were held, they did not reflect the commitment to worker participation. One worker reported that "at one of the team meetings, the foreman got up and listed for us . . . ways we could be fired . . . He talks, we listen."(4)

The plant in Fremont is a resounding success and is planning its expansion. The plant in Van Nuys is a failure. Observers estimate that it will close within 3 years.(4)

2. "My people will do TQM because I tell them to."

TQM is being implemented as many Navy programs traditionally are: notification of command interest, appointment of a responsible party, dissemination along the chain of command, with expectations of efficient compliance and broad success.(2) *This method works* and is broadly successful for the world's leading sea power. Our sole reliance upon this method as we implement TQM could prove our undoing. We are making the mistake which Leader warns us about: adding quality on top of current processes without fundamentally changing them. (1) And what are those processes? Where is change required in order to establish the TQM culture so that CNO's directive (2) can be accomplished?

There is a common perception that poor outcomes are caused primarily by failures of motivation in the workforce ("Sir, we just need to hold their feet to the fire"). This is in sharp contrast to the findings of W. Edwards Deming and Joseph M. Duran, the American originators of TQM.

They discovered that problems, and therefore opportunities to improve quality, had usually been built directly into the complex production processes they studied, and that defects in quality could only rarely be attributed to a lack of will, skill, or benign intention among the people involved with the processes. Even when people were at the root of defects, they learned, the problem was generally not one of motivation or effort, but rather of poor job design, failure of leadership or unclear purpose.(5)

Thus, TQM assumes that poor outcomes are the result of problems or inadequacies of the system, and that by using the workers' knowledge of how the system operates, such system failures can be discovered and corrected. Our present incentive system denies us this opportunity.

There is a Navywide belief that the human element (as personified by the CO, OIC, OOD, CPO, or LPO) is the major or controlling defective element in any undesired event. These people are the dials that we turn to alter outcomes, and we often squeeze these people in advance as a form of error prophylaxis. Therefore, we use extensive and detailed screening boards to ensure that only the most qualified humans assume these key positions. We then monitor them closely with inspections, fitness reports, and occurrence screens, assuming that the detection of any error signal (Red Flag) equates with their inadequacies.

We therefore select individuals whose skills include not generating error signals. We place them into an environment where any Red Flag can end their careers, where they will expend vast energies in "covering their 6 o'clock." How, then, can we expect these people to provide an environment for their command which supports and promotes the discovery and examination of errors?

In addition, this traditional approach is antithetical to the principle of customer service, because it forces management attention on the detailed internal workings of its own

organization rather than on the organization's output. According to the DOD TQM Guide, "In an organization that is used to having the person with the most authority tell people what is wanted, the change to a customer-driven organization is a very tough one The role of the manager in the new culture is to communicate, consult, delegate, coach, mentor, remove barriers, and establish trust."(6) *There is no room in the TQM culture for micromanagement.* It is time for the micromanager (and the primitive management concepts which created him) to assume his rightful place with the rest of the dinosaurs. This cannot be done until the basic incentive structure is overhauled.

It is the intention of this article to emphasize the *sine qua non* of TQM: treating the Red Flag as a friend rather than as an enemy. This requires a chain of command which support the discovery of errors, treating them primarily as system imperfections which can be improved only if discovered. Thus, a Red Flag is seen as the first step toward a positive contribution, not an occasion for punishment and blame. We realize that we are asking the top leadership of our Navy to examine the very roots of naval discipline here; in the balance, however, rest the overwhelming benefits yielded by TQM. *This management strategy does not dismantle the chain of command*, but reframes the notion of what constitutes responsibility and accountability, and how problems can be addressed at the system, rather than the personal, level.

Again, the DOD TQM Guide observes that "employees will expend the necessary efforts when they perceive that their performance will lead to desired rewards Employees model their behavior on how management acts." (7) *Our people will not do TQM because we tell them to.* They will do it when an environment is established which supports and rewards their doing it. They will do it when they believe it.

3. "TQM can be fractionally applied, leaving out the elements which are nontraditional, or politically inconvenient."

If any experience highlights this myth, it is the experience in the Van Nuys GM plant. Steven Yokich, head of UAW's GM department, observes that GM doesn't have a true team concept . . . [GM] looks at the Japanese system and says [to their workers], why can't you become like the Japanese? [GM] can't just have what they want to pick out of the system They have to sit down and make commitments and live up to them."(8)

It is well known in medicine that if you practice 50 percent sterile technique, you will not reduce infection 50 percent, and 90 percent sterile technique will not result in anywhere near 90 percent reduction in infections. Only when you practice 100 percent sterile technique do you obtain the desired results. Intent must be matched with right understanding and complete followthrough. When

hands are scrubbed in ignorance, they are wiped on dirty towels. Only when all hands understand germ theory do the hands arrive clean on the patient.

We contend here that TQM is radically distinct management philosophy, requiring an all hands participation commensurate with aseptic technique. Fractional application will not yield fractional results: it will yield no results whatever.

Commitment entails more than new policies, directives, letters, and speeches. The workforce judges commitment of top management by the behaviors they exhibit Management has been saying the right words for decades. People have learned, however, that management frequently does not match their lips with their feet; and over time, have lost some confidence in management's ability to do what it says. They will be convinced when management visibly commits through tangible actions to error-free work, management by prevention, and meeting customer requirements.(9)

The Van Nuys plant paid extensive lip service to "quality." But when a night shift manager attempted to hammer a right-handed part into a left-handed position (in order to get the line moving again after they had run out of left-handed parts), all hands who witnessed this now realized that the commitment to quality was rhetoric rather than action.(10) The basic mindset of management had not changed in spite of the schooling and overt commitment to TQM. Management priorities remained unchanged, as did the essentially adversarial relationships between workers and management.

Recommendations for TQM Implementation

In order to demonstrate top-level commitment to the establishment of the TQM culture within our Navy, the following suggestions are submitted:

1. Rework NAVPERS 15255Q (Navy Leader Planning Guide), NAVPERS 1611/1 (Report on the Fitness of Officers), and NAVPERS 1616/24 (Report on the Fitness of Enlisted Personnel) to embody the characteristics of an effective TQM leader.

In addition to instituting other formal and informal methods of recognition for personnel involvement in the TQM efforts, the explicit inclusion of these criteria in the formal fitness review process will tie the ultimate incentive to the behaviors which support TQM implementation. It also provides a clear message that the highest levels of command are serious about making TQM work. We must specifically promote the following:

- Satisfies both internal and external customer requirements.
- Balances long- and short-term objectives.
- Encourages group-derived continuous improvement.
- Encourages communication and cooperation among staff areas.

- Appropriately distributes authority and responsibility.
- Promotes the discovery and correction of errors.

2. Rescind NAVMEDCOM Instruction 6010.6 (Quality Assurance (QA) Program), transferring its positive functions into the executive steering groups of our health care facilities.

In his discussion of statistical quality control, Deming prizewinner Hajime Karatsu cautions against accepting data at face value. He warns us to be sure we are measuring what *should* be measured, not simply what *can* be measured. If attention is paid to data which are not significantly connected to the goals being pursued, it is a waste of time and effort, and may lead you down erroneous paths, away from the real problems.⁽¹¹⁾

Using the Quality Assurance Program as a yardstick by which to measure quality of care for improvement will likely lead us down these erroneous paths. First, the current Quality Assurance Program is founded on very different philosophical and operational bases than is TQM. The QA program evaluations are based on comparing a normative model to the target hospital's statistics, unadjusted for such variables as patient population characteristics. Conformance to the model norms merely means that the hospital is no worse, and no better, than the average hospital. In fact, QA implies that quality is equivalent to not making (or reporting) predefined mistakes. The current Quality Assurance Program, thus, is based on measures which have not been shown to be related to true quality of care as pursued by TQM. Adherence to implicit requirements based on their evaluation criteria (for example, avoiding cesarean section, *a priori*, or reluctance to readmit patients within 15 days of release) may result in poor clinical outcomes for the specific patient population being treated, i.e., high risk obstetrical patients or the retired population.

Second, the knowledge that hospitals will be judged on such normative standards provides incentives for physicians and hospitals to refer or turn away cases which could have been treated (from a clinical point of view), but might adversely affect the hospital's statistics on patient care. Thus, the statistics which are intended to reflect quality of care actually reflect the hospital's choice of who is convenient or easy to treat. This is inimical to the goal of quality medical care. As long as personnel remain accountable to these normative measures of quality, the incentive remains to suppress Red Flags, rather than embrace them and correct underlying problems. Finally, the Quality Assurance Program looks only at arbitrary benchmarks, not at the elements making up quality.

Instead of focusing on the normative measures of the Quality Assurance Program, attention must be paid to developing explicit and operational criteria for quality Navy health care. The Navy is the best qualified to do this.

We expect this to include guidelines for adequate preventive health care services and associated outcomes, following the themes expressed by the Surgeon General of the Navy.⁽¹²⁾ The monitoring of these criteria must shift to the local executive steering groups rather than simply installing a TQM program next to the existing QA program. These steering groups, and the personnel involved in providing care, will be trained in the TQM methods which can identify areas for improvement and methodologies for doing so.

3. Abandon reliance on Joint Commission on the Accreditation of Hospitals (JCAH), transferring positive elements of their program into BUMED.

Reliance on the JCAH as an external assurance of hospital quality has many of the same drawbacks as reliance on the Quality Assurance Program. In addition to fostering arbitrary criteria, there is an essentially adversarial relationship between hospitals and inspectors. This is clearly antithetical to the essence of the TQM culture that we are implementing.

To be effective, TQM requires a coherent culture of cooperation and continuous improvement from top to bottom. The presence of powerful evaluation mechanisms which embody principles antagonistic to those of TQM will send mixed messages to our personnel and seriously impede our progress toward improving customer service.

Both the Quality Assurance Program and the JCAH Accreditation require significant resources for the data collection, maintenance, and monitoring activities, resources which could otherwise be used for the provision and improvement of the health care delivery system. Since TQM culture has built-in methods for assuring quality as a part of the health care delivery process, it is difficult to justify the additional administrative resources being expended on programs which are likely to interfere with, rather than enhance, the pursuit of quality.

Finally, if management is serious about TQM, the elimination of the Quality Assurance Program and the JCAH Accreditation will be a sign that management is "voting with their feet." It will serve as a powerful message from the highest command levels that they are truly committed to the successful and permanent implementation of TQM, and that they fully expect it to work.

What Will It Look Like As We Do It Right?

Time: 1991

Place: Navy Hospital Command Conference Room, Bugsville, USA

Background: TQM officially "kicked off" here 18 months ago.

The initial cynicism and disbelief regarding this new management philosophy was demolished by dramatic, far-reaching changes in BUMED monitoring and promotion board criteria. After repeated emphasis on the discovery and systemic remediation of error, a multitude of changes in patient flow have been successfully implemented. Staff morale and patient satisfaction are at a sustained high.

The Executive Steering Group is meeting to review these most recent surveys. The following case was selected:

A 56-year-old white male presented to the emergency department (ER) with the chief complaint of shortness of breath. His swift triage was followed by activation of the ER's SOB protocol. The ER LPO and the duty respiratory tech moved swiftly to implement the procedures they had developed themselves 4 months earlier. IV aminophylline was mixed from supplies stored on site by an arrangement outlined at a recent Quality Circle. Blood was skillfully drawn at the IV site established by the former QA control nurse, now freed up for clinical duties. The swift and aggressive treatment given to this patient reduced his hospital stay 3 days below the national average for this admission.

The commanding officer solicits input from his Executive Steering Group and receives the following:

Command Master Chief: "Skipper, 2 years ago, I wouldn't have believed this TQM could work. And last year, when I found the respiratory tech hiding in the stairwell, I was sure that these people were taking advantage of the changes in our discipline. But instead of tearing this kid's head off, I looked him in the eye and asked what did he need from me in order to want to care for our patients. I never saw such a look on a sailor's face. He has been the prime mover in the SOB protocol."

Lab Officer: "Sir, once we got together with the doctors and guaranteed them prompt service on "NOW" lab orders, they truly began to order less "STAT" lab in order to get home quicker. Now "STAT" really means "STAT" and we can prioritize our work to serve all our customers well."

Nursing Director: "Sir, our emergency room overutilization came from patient ignorance of, and frustration with, the appointment system in our primary care clinics. Once we published all appointment procedures and phone numbers, patients shifted into normal working hours. Once our former QA nurse could return to clinical medicine with the rest of us, we were able to assign a primary triage nurse. Our patients don't mind waiting longer when a nurse has talked to them and explained the true emergencies at the head of the line."

Executive Officer: "Skipper, we had several false starts, convincing our providers that our shop was customer driven. But when 'customer service' became a line item on our fitreps, it really caught their attention. Many providers used to turf cases to specialty clinics to avoid unpleasant statistics coming back to haunt them. Ophthalmology was swamped with simple pink-eye. Now that the atmosphere

has changed, we are handling these cases in primary care, and the specialty clinics have greatly reduced waiting lists.

"I had to ping on our surgical case review. They had been reporting 'no problems' for months. But, when I went down there, I found two scrub techs more than willing to shed light on OR problems. I had to convince them and their chief of service that we can't fix what we don't know about. Some of their suggestions we could not implement, and others caused us unforeseen problems when we did. But at least they now know that they won't be punished for trying and failing, only for their continued silence. And some of those failures led us to recognize hidden problems which we have now found ways of solving."

Commanding Officer: "You know, when I first heard about TQM, I thought that we already had it. I mean, I solicit input from my people, I encourage communication between departments. We don't just stop and rest when the job could be done better. But a TQM program in full swing is like nothing I've ever seen in 27 years of naval service. The next CO who tells me that his outfit already does TQM needs to come here and have a look around. TQM Officer?"

TQM Officer: "Work is done without taking credit. It therefore lasts forever. When the rulers don't interfere, the people say, 'We did it.' A skillful officer isn't warlike. A skillful fighter isn't violent. A skillful conqueror isn't competitive. A skillful employer places himself below others. This is called the essence of not competing. This is called the power to use men's abilities. This is called complying with heaven. Since ancient times it has been the best way." (13)

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Continuous Quality Improvement in the Navy Medical Department: Revolution or Evolution?

CAPT David Kemp, MC, USN
CAPT Robert Zentmyer, MSC, USN

Today's literature on leadership and management is replete with exhortations to focus on quality and on continual improvement as the *sine qua non* for increased competitiveness, market share, effectiveness, efficiency, cost containment, customer satisfaction, survival, or simply because it is the "right thing to do." Almost any health care professional would have to agree that if all health care systems and processes operate as they are supposed to every time, if those systems and processes are focused on the right tasks, and if they are designed to meet the needs and desires of customers, then we are headed toward high quality health care services. The Navy Surgeon General's personal goal in embracing the concept of Total Quality Management (TQM)* is that our ultimate customers, both individuals and organizations, be *delighted* with us, not just satisfied.

VADM James A. Zimble's desire for delighted customers** recognizes that any definition of health care quality must include customer perceptions as well as technical quality (i.e., quality as most often defined by the provider). Customers and payers include more than pro-

fessional and technical competence in their definition of quality. Their definitions encompass the totality of their experience with the health care process, including adequate parking facilities, pleasant and relaxing physical surroundings, caring attitudes among health care workers including respect and empathy, and many other aspects of health care quality that traditional quality assurance programs do not measure. Furthermore, these aspects of service are only beginning to be recognized by organizations such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

Speaking at the Third Annual Conference on Federal Quality, L. Bruce Laingen, executive director of the National Commission on Public Service (Volcker Commission) and former Ambassador to Iran, stressed the importance of customer perceptions when he said that "... people take good service for granted and bad service personally." (1) Yet, most quality assurance programs and accrediting systems in the health care field have yet to evaluate service-related parameters of quality, focusing instead on the measurement of technical quality, using normative criteria.

In most cases, these measurements have emphasized outcome measurement and have been limited to clinical practice.(2) Furthermore, traditional quality assurance programs attempt to identify all variations from the normative value and to concentrate on learning *who* caused the variation. This focus fails to recognize that clinical failings may be, and often are, inherent in *the system* rather than the individual clinician. This "punitive" emphasis does not direct attention to improving substandard system

*ADM Frank B. Kelso II, the new Chief of Naval Operations, favors the term Total Quality Leadership (TQL). In this article we use the more traditional terminology of TQM. Functionally, they appear to be synonymous.

**The term "customers" encompasses a far broader spectrum than "patients," although patients form an important group of customers. In addition, we provide service to Navy and Marine Corps leadership, other beneficiaries, and, not the least, each other as members of the Navy Medical Department.

performance and may, in fact, obscure possible improvement by causing less than totally candid evaluation by providers.(3)

If traditional quality assurance programs have become associated with punitive actions and have therefore been less than fully successful in improving quality, what then should we do? If the standards of the JCAHO have focused on compliance with specifications and have become associated with "quality through inspection," what position should Navy medicine take regarding the accreditation process?

"One if By Land and Two if by Sea"

We do not advocate abandoning Joint Commission "membership" or the Quality Assurance Program as do McCombs and Kreitman elsewhere in this issue of *Navy Medicine*.(4) These "revolutionary" actions are not only contrary to Department of Defense and Department of the Navy policy, but they would abandon the significant progress made over the last 10 years of effort. We believe that we should build on our past experiences, recognizing that mistakes as well as successes can guide our future path.

Perhaps equally important, we must not fall into the trap of believing that only the Navy can determine what is best for Navy health care. While every organization has certain unique characteristics which set it apart from others in its field, it shares far more characteristics with

those other organizations. The technique of benchmarking against world-class organizations is an approach advocated by virtually every organization involved in continuous quality improvement. We must be very cautious not to discard existing benchmarks, such as the Joint Commission on Accreditation of Healthcare Organizations, before new benchmarks are developed.

Every industry has standards which must be met and against which it is measured continually. Florida Power and Light, the first corporation outside Japan to win the prestigious Deming Prize provides an example. Their nuclear generating plants continue to undergo periodic inspection by the U.S. Government to ensure that they meet Federal safety and operating standards.

Even though Florida Power and Light is a proven leader in continuous quality improvement, they did not (and cannot) withdraw from industry monitoring programs. Similar comparisons could be made regarding Japanese automobile manufacturers complying with U.S. safety standards.

In addition to industry standards, a major characteristic of any profession is its responsibility to protect its customers (patients, clients, parishioners, etc.) through self-regulation and peer review. Quality health care must continue to self-monitor technical quality as well as heed the perceptions of functional quality by patients.(3) Therefore, one must consider all aspects of quality if the cus-

Navy Medical Department Vision

WE ARE the Medical Department of the United States Navy.

WE ARE COMMITTED to providing an environment of health care excellence in which:

ALL ENTRUSTED TO OUR CARE proudly view Navy medicine as their preferred source for health care.

HEALTH CARE PROFESSIONALS view Navy medicine as a superior arena for realizing their professional growth and satisfaction.

HEALTH CARE ORGANIZATIONS view the Navy Medical Department as a paradigm of excellence.

FLEET AND FIELD COMMANDERS view Navy medicine as fully capable of providing optimal, timely, and comprehensive health care to their sailors and marines worldwide in peace and war.

OUR PEOPLE view themselves as empowered members of the world's finest health care team.

WE ARE STANDING BY AND WILL ALWAYS BE READY TO ASSIST.

Figure 3

tomer's perception of high quality products and services is to be built and maintained.

Writing for the *Sloan Management Review*, David A. Garvin identifies five approaches to quality:

- The Transcendent Approach: A sense of innate excellence that cannot be defined precisely, but that customers recognize nonetheless (i.e., Lladro porcelain figurines).
- The Product-Based Approach: Quality based on a precise and measurable variable (i.e., butterfat content in ice cream).
- The User-Based Approach: Quality lies in the eyes of the beholder (i.e., Nordstroms).
- The Manufacturing-Based Approach: An internal focused approach where excellence is equated with meeting specifications (i.e., the Navy QA program).
- The Value-Based Approach: Quality is measured in the terms of costs and prices, providing performance or service at an acceptable cost (5) (i.e., new Ford products).

Garvin emphasizes the need to take all these perspectives on quality into consideration and stresses that reliance on a single definition or approach can be a frequent source of problems. Lanning and O'Connor (3) discuss this same concept in the health care context. Thus, while the immediate disestablishment of the Navy's Quality Assurance Program may be deceptively attractive to those who view it as onerous, the Quality Assurance Program addresses a very significant subset of the "new" quality by measuring technical (i.e., Manufacturing-Based) quality.

Finally, in a worldwide, geographically dispersed organization like the Navy Medical Department, some type of standardization and centralization is essential to enable people to be effective members of the organization. Just as

organizational structures must be similar to provide for organizational stability, so should certain critical aspects of organizational operations and service be predictable from location to location for continued acceptability to our mobile staff and patient customers. This is entirely consistent with total quality management principles which recognize that standardization of processes decreases variation and improves predictability.

Both JCAHO and the Navy programs which institutionalize its standards allow, indeed encourage, all elements of the organization to exceed those requirements. While the accreditation certificate does not guarantee world-class health care services to a customer, it does help assure that organization's customers of health care services which meet industry-accepted norms of technical quality.

Virtually every organization which has undertaken the journey into continuous quality improvement has found it to be long and difficult. During that journey, the organization must continue to meet existing requirements. To paraphrase the familiar swamp analogy, "you must continue to attend to the alligators while you work to drain the swamp." However, this does not mean that existing standards and procedures remain static during the journey. The current "Agenda for Change" of the JCAHO and the recent changes in the Navy Medical Department Quality Assurance Program represent significant efforts to move toward the quality improvement ideals of the future.

The Tortoise Beats the Hare

Never before has the development and application of standards received more attention in the health care industry than it is receiving today. However, Lanning and O'Connor (3) rightly warn that becoming overzealous in watching signposts (standards) could lead us astray unless

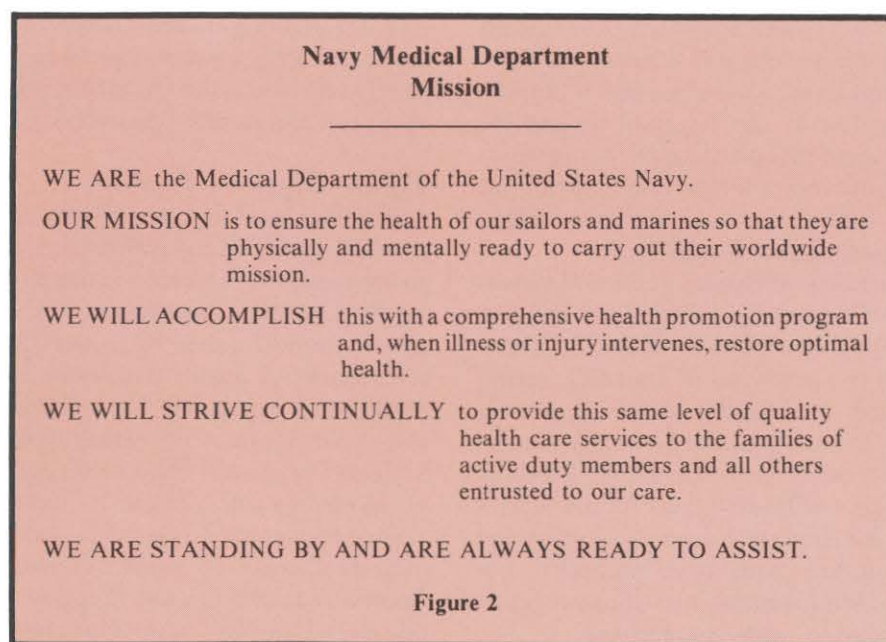


Figure 2

Navy Medical Department Guiding Principles

WE ARE the Medical Department of the United States Navy.

WE EXIST to ensure the best physical and mental health of the men and women of the United States Navy and Marine Corps.

WE WILL *Support* the combat readiness of the Navy and Marine Corps.

Care for all persons as unique human beings worthy of our courtesy, compassion, and respect.

Earn the trust and confidence of our patients by enthusiastically providing prompt access to quality health care.

Attend to the medical needs of the families of our active duty members, our retirees and their families, for just as the family supports the force, so must we support the family.

Teach, for it is through education that we build the foundation for our future.

Continuously Improve in all aspects of our enterprise.

WE CARE for each other just as we care for our patients. This is the basis of the teamwork and trust that must exist for us to succeed.

WE ARE STANDING BY AND ARE ALWAYS READY TO ASSIST.

Figure 1

we use those signposts to build quality improvement into the organization as a long-range strategy rather than viewing the signposts as an end in themselves.

Dr. Donald Berwick, a pioneer among physicians in embracing the total quality management philosophy, emphasizes that the abandonment of quality assurance is not the answer to the question of how to change from the traditional "theory of bad apples" approach.^(2,6) Instead he advocates the integration of quality assurance and quality improvement in a new framework with a shift in emphasis from the deficient few at the extremes toward the improvement of the level of care provided by the organization. Other authorities advocate a high level position for quality assurance in health care organizations complemented by strategic management functions.⁽⁷⁾

Dr. Berwick's Department of Quality of Care Measurement at the Harvard Community Health Plan and Dr. Batalden's patient judgment system at the Hospital Corporation of America are two examples of nationally recognized efforts to evolve successfully quality assurance programs from the traditional provider focus on technical quality to the customer focus preached by Dr. W. Edwards Deming.⁽⁸⁾ In these and similar efforts by Alliant Health System of Louisville, KY, and the University of Michigan Medical Center in Ann Arbor, the move has been evolutionary with continued improvement in existing programs and continued adherence to industry standards.

To be truly effective in the long term, total quality management must be carefully woven into every aspect of an organization's operation so that it becomes such an integral part of the organization it cannot be separated out and "applied." At a recent seminar conducted by Dr. Deming in Washington, DC, he repeatedly emphasized that to conclude that the Deming approach to management (i.e., the total quality management approach) was a system to be applied to organizational problem solving was to completely misunderstand the all-encompassing nature of the change in philosophy required.⁽⁸⁾

TQM—Myth or Reality?

How then does an organization, more specifically, how does the chief executive officer (i.e., the Surgeon General) go about moving an organization as large and complex as the Navy Medical Department from its traditional hierarchical, authoritarian, bureaucratic stance toward the benchmarks of quality excellence established by Florida Power and Light, Hospital Corporation of America, Harley-Davidson, Alliant Health System, or the Naval Air Systems Command? Most assuredly significant resistance to the change will continue to manifest itself. When that change applies to the elemental character of the place an individual works, he or she is certain to be threatened and feel stressed, anxious, and skeptical. When that organization is the U.S. Navy with its long history and strongly held

Navy Medical Department Quality Essentials

WE ARE the Medical Department of the United States Navy.

CUSTOMER NEEDS	We will meet the customer's needs. Our goal is to delight our customers.
SUPPLIERS	We will form relationships with suppliers who continually strive to achieve the utmost in quality products and services.
CONTINUOUS IMPROVEMENT	We will continually focus on improving our processes, never being satisfied with the status quo or less than optimal services. We will do it right the first time.
MANAGEMENT BY DATA	We will exercise management by fact, using statistically valid data collection and analysis to monitor our processes and progress towards achieving and exceeding quality standards.
TRAINING	We will continually train our people in the specifics of their jobs and in their roles in improving what they do.
PARTICIPATION	Every person in the organization will be empowered to contribute actively to quality improvement efforts.
INNOVATION	We will foster an environment in which suggestions for improvement and innovation are solicited, implemented whenever possible, shared, and applauded.
PROFESSIONAL GROWTH	Every person will have full opportunity to develop and grow within the organization and in his or her chosen profession.
RECOGNITION	We will recognize and reward team accomplishments in continuously improving our enterprise.

WE ARE STANDING BY AND ARE ALWAYS READY TO ASSIST.

Figure 4

customs, beliefs, and traditions, the effort is certain to be long, difficult, and at times frustrating. We strongly believe that these changes, however difficult to accept, are inevitable if the Navy Medical Department is to remain effective in the changing health care environment.

We also believe that the drastic shock value of immediate "revolutionary" structural changes and the casting off of current measurement systems as advocated by McCombs and Kreitman would be quickly offset by confusion, uncertainty, anxiety, and attendant loss of effectiveness. Furthermore, the responsibility which a health care organization has to its patients demands that we continue to ensure technical and professional quality while we develop the talents, attitudes, beliefs, and behaviors necessary to broaden our definition of that quality ("an evolution"). Recently, Dr. Deming pointed out that "quality by inspection" is sometimes required when the effect or poor quality is so significant as to demand it.⁽¹⁰⁾ Because of the value that Judeo-Christian culture places on each individ-

ual life, it is easier to impose a "zero defects" standard on the health care industry than on any other. On the other hand, a "three-sigma" standard (i.e., a certain number of adverse actions per 100 patient contacts), clearly acceptable in some industries, is not perceived as acceptable in the health care industry.

The Navy Surgeon General, working with his Executive Steering Group has chosen to answer the question posed at the beginning of this section with a multiphasic effort to begin the transformation of the Navy Medical Department to an organization which focuses on continuous quality improvement:

- **Education and Training:** In January 1990, the Navy Medical Quality Institute was established at the Naval School of Health Sciences, Bethesda, MD. This institute is developing training courses covering major skills necessary for carrying out continuous quality improvement, is developing a TQM library, and has revised all management courses it offers to include the concepts of TQM.

- **Cultural Foundations:** In its first 6 months of existence, the Executive Steering Group has worked to capture in concise and easily understood terms, statements of basic philosophy to guide the efforts of the Navy Medical Department in the future. The Guiding Principles in Figure 1 were developed first and have been distributed throughout the Medical Department. More recently, the revised Mission Statement in Figure 2 has been developed and is being submitted to the Secretary of the Navy for approval. The Medical Department Vision in Figure 3 and the Quality Essentials in Figure 4 complete the quartet of documents to guide the Navy Medical Department of the 1990s. All these documents have undergone the most thorough and thoughtful evaluation prior to their adoption by the Executive Steering Group.

- **Strategic Planning:** The Navy Medical Department has been rightly criticized for its lack of long-range planning for the future. Development of a strategic plan is therefore a major effort identified by the Surgeon General to provide the overall direction for the Navy Medical Department during the next decade. Efforts are now underway to develop such a strategic plan, building on the cultural foundation documents above, and to have that plan distributed by the end of this year.

- **Coordinated Quality Guidance:** In March 1990, VADM Zimble announced the establishment of the Assistant Chief for Quality Management (MED-08).⁽¹¹⁾ Ultimately, this office will be the focal point for support of all quality management efforts in the Navy Medical Department. The office now includes support for TQM implementation, the innovation program, and Navy Medical Department strategic planning. At the appropriate time in our journey, the Quality Assurance Division will move to MED-08 to continue the reshaping of that program to support comprehensive quality improvement efforts. The Management Control Program, required by Federal statute, will continue as a separate, but closely coordinated, function.

- **Local Initiatives:** At the 1989 Medical Department Flag Officers Conference and the 1989 Commanding Officers Conference, a significant portion of time available was devoted to the concepts of TQM. At those conferences, the Surgeon General personally encouraged the leaders of Navy medicine to begin the transformation to this new philosophy. That was a risky move, for VADM Zimble knew that resources were not yet on line to support total implementation efforts. However, he believes that local commanding officers should take the initiative to begin the transformation at their level while organizationwide guidelines and procedures are under development. He is also a believer in what Brian Dumaine calls "creating universities" within the organization by identifying models and holding them up as an example from which others can learn.⁽¹²⁾ A case in point is the Naval Hospital, San Diego where the commanding officer has moved ahead aggressively, developed a command infrastructure, secured training for key staff members, developed an implementation

methodology, and chartered quality improvement teams to work on initial processes with high priority.

The First Steps

Every journey begins with the first steps. The first steps being taken by our Surgeon General are certainly not as dramatic as the actions proposed by McCombs and Kreitman. However, they are designed to move the Navy Medical Department steadily forward toward the "new" philosophies of total quality management while recognizing the necessity of continuing to meet military and civilian standards of acceptable quality from a technical sense. The JCAHO has also begun its evolutionary journey to become a quality-driven organization. We would do well to work with the Joint Commission in its development of a quality focus which includes customer perceptions as well as professional standards.

Evolution or revolution? Perhaps both. We prefer evolutionary organizational change as a means to accomplish the revolutionary cultural change necessary for every member of the Navy Medical Department to become involved in a process of continuous quality improvement—not just because it is what "management" wants but because it has become our normal way of working. The ultimate compliment to our first halting efforts will occur when those who follow us in the 21st century look back on the 20th century and find it hard to understand how we could have operated in such a strongly authoritarian and personally restrictive manner.

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Highlights From the Naval Medical Research and Development Command

Bethesda, MD

• The Polar T₃ Syndrome

Navy researchers at the Environmental Medicine Department, Naval Medical Research Institute, Bethesda, MD, recently reported a new clinical syndrome called "Polar T₃ Syndrome," involving thyroid hormone alterations in personnel exposed to long-term cold operational environments. [Note: Thyroid hormones help regulate metabolic rate, cardiovascular function, lipid metabolism, and psychological mood and readily adjust to starvation, overfeeding, and illness. Triiodothyronine (T₃) is the active form of thyroid hormones in the cell nucleus.] The syndrome was defined following a study involving personnel of the Naval Support Force Antarctica "Operation Deep Freeze" wintering in Antarctica for 5 months, beginning in January 1990. The personnel in the study showed a doubling of the T₃ production rate, changes in T₃ distribution in the body, and alterations in the T₃ metabolic clearance rate. In conjunction with these dramatic changes in the T₃ homeostasis, the subjects consumed 40 percent more calories, showed no change in body weight, and displayed physiological characteristics of cold adaptation. These observations suggest that T₃ plays a vitally important role in chronic cold weather adaptation.

* * *

• Rat and Swine Model of Experimental Sepsis

Sepsis and septic shock are significant causes of mortality in combat casualties. Septic shock results from both abnormal levels or activities of mediators released by the host and from the toxic effects of the endotoxin components of the bacterial cell membranes. Septic shock researchers at the Combat Casualty Care Research Department, Naval Medical Research Institute developed rat and swine models of experimental sepsis to approximate the disorder seen in human patients. Using these models, the pathophysiology caused by sepsis-associated mediators such as endotoxin, interleukins (ILs), and tumor necrosis factor (TNF) is being assessed. Studies reveal that ILs and TNF are major causes of vascular desensitization to the

catecholamines epinephrine and norepinephrine, hormones commonly used to treat septic shock. These animal models are also of great value in testing and evaluating novel therapies for treatment. Agents like antibodies to TNF, endotoxin neutralizing materials, and drugs which alter mediator levels are currently being tested for their ability to reduce organ damage and deaths due to sepsis. These initial steps will lead to human studies and improvements in therapy or prevention of gram-negative sepsis in Navy and Marine Corps personnel.

* * *

• New Technology Offers Hope for the Delivery of a Campylobacter Vaccine

Numerous studies have shown that campylobacter is a significant cause of bacterial diarrheas. Diarrheal diseases have the potential to threaten military operations, especially in areas of the world with extremely poor sanitation. Researchers at the Infectious Diseases Department, Naval Medical Research Institute are applying new technology to stimulate gut immunity to campylobacter. Lactide and glycoside polymer mixtures are being used to make microspheres, which in turn are being tested as delivery systems for antigen presentation at sites responsible for mucosal immunity. Bacterial antigens encapsulated in microspheres are taken up through either antigen sampling or through the M cells of the Peyer's patches. Smaller particles are disseminated while larger particles remain in the Peyer's patches where the mucosal immune response is initiated. The smaller particle taken up by cells responsible for systemic immunity may also have useful effects. Researchers hope that the use of microspheres for incorporating such a nonliving antigen in oral vaccines will significantly speed the development of vaccines to campylobacter as well as to other diarrhea-causing organisms. Human safety and immunogenicity studies with such preparations may begin in 1991.

For additional information on these or other medical R&D projects, contact NMRDC Code 40 at Commercial (301) 295-1468 or Autovon 295-1468.



HM2 David VanGelder, NSHS

Navy Medicine Mobilizes for Desert Shield

USNS *Comfort*

Less than 3 weeks after Iraq invaded Kuwait, almost 800 uniformed men and women at National Naval Medical Center (NNMC), Bethesda, MD, were on their way to support Operation Desert Shield. They were assigned to the Medical Treatment Facility (MTF) and USNS *Comfort* (T-AH 20), a hospital ship designed to provide

health care for casualties in an armed conflict.

Events began to unfold 2 Aug 1990 when Iraqi tanks rumbled across the Kuwaiti border and Iraq's Saddam Hussein proclaimed Kuwait "annexed" to his country. President Bush ordered U.S. forces to the region and Navy warships steamed for the Persian Gulf.

On 9 Aug, NNMC's commander received orders to mobilize the MTF aboard *Comfort* and an around-the-clock evolution was set in motion to get the crew, divided into two stages, underway. Crewmembers attended briefings, updated personnel and health records, executed wills, received inoculations, collected "dog tags" and Geneva convention cards,



packed uniforms, and notified family members that they were boarding ship and heading for the Middle East.

Departure day for the first-stage *Comfort* crew was Monday, 13 Aug. Eight days later, the command did it all over again when the second-stage deployment got underway. More than 400 sailors from NNMC and its associated hospitals and clinics in the Washington area boarded buses for nearby Andrews AFB. That evening,

they lifted off in a chartered 747 for Rota, Spain, where they joined *Comfort* enroute to the Middle East. On 8 Sept, the hospital ship arrived on station in the Persian Gulf.

—Public Affairs Office, NNMC, Bethesda, MD.

USNS *Mercy*

After a month-long transit of nearly 12,000 miles, the USNS *Mercy* (T-AH 19) arrived in the Arabian Gulf on 15

HM2 David VanGelder, NSHS



Sept in support of Desert Shield. *Mercy* is operated and maintained by a 70-member civilian Military Sealift Command (MSC) crew led by CAPT Dan O'Brien, the ship's master. CAPT Paul Barry, MC, is the commanding officer of the MTF. The MTF crew of over 900 people staff one of the largest trauma facilities in the world, afloat or ashore.

Mercy's primary mission, like that of its sister ship *Comfort*, is to rehabilitate patients with lesser injuries so that they may return to their units. The secondary mission is to stabilize the more seriously ill or injured so that they can be transported back to





Bill Fisher, NSHS

CONUS for further rehabilitative care. Patients arrive by helicopter or by small boat and are taken to a casualty reception area for an assessment of the medical treatment needed. From there, they proceed to surgery or to other treatment areas, and eventually to one of 15 wards.

There are 500 physicians, dentists, nurses, health care administrators, allied health scientists, and medical and dental technicians aboard *Mercy's* MTF. In addition, 400 nonmedical support personnel ensure that all administrative, supply, personnel, and other critical areas function smoothly.

A nine-member surgical team from

the Canadian Forces joined *Mercy* in early September to work alongside their U.S. counterparts in support of Desert Shield.

Normal operations for the crew involve training, drills, and seeing patients. The training department's theme has been to train for the worst and hope for the best. Classes have centered around safety requirements for life at sea, special requirements for a possible combat scenario such as gas mask familiarization, and specific medical training for combat casualties. Drills have exercised what has been taught in the classroom as well as the flow of the hospital. Casualty drills

have been run with up to 80 simulated patients being processed in less than 4 hours. Each casualty drill has exercised the staff in a different direction while giving each team (e.g., casualty receiving, radiology, PACU, ICU, physical therapy/burn treatment, the lab, pharmacy, and the wards) more and more opportunities to test its own internal systems for patient care.

As a working hospital, *Mercy* has admitted about 200 patients as of 26 Oct from both sea and land-based units in the area. One hundred and two cases have been treated in the operating rooms and have ranged from orthopedic cases, such as arthros-



copies, to appendectomies. In addition, *Mercy's* optical lab has created 277 pairs of glasses since the ship left port. The dental staff has seen 485 patients and sick call has seen more than 2,000 outpatients. The CT scan was used during the ship's first day out of San Francisco Bay and has averaged 15-20 patient visits a day for a total of over 450 to date.

—Public Affairs Office, NH Oakland, CA.

Marine Corps

The Marine Corps has organic medical assets which provide echelon I and II medical care in peacetime and war. Units train and participate in exercises

while maintaining the highest degree of readiness to respond to contingencies throughout the world. In peacetime the garrison health care mission does not require the full compliment of doctors, nurses, Medical Service Corps officers, and hospital corpsmen that would be required in a contingency or global war.

The permanently assigned health care professionals of the three active divisions, aircraft wings, and force service support groups form the nucleus or "skeleton." In a contingency, this is "flushed out" to full table of organization strength by medical personnel from fixed treatment facilities within

CONUS by the Medical Personnel Unit Augmentation System (MPU-AS). These health care professionals, in addition to bringing the combat units such as infantry, artillery, and tank battalions up to full T/O strength, also augment the medical battalion within the FSSG. Each of these battalions with their H&S company, two surgical support companies of 5 operating rooms and 150 beds each, and four collecting and clearing companies of 2 operating rooms and 60 beds each, contain over 700 medical personnel. They provide initial resuscitative care, surgical intervention, and stabilization on the battlefield,



sionalism of the Navy Medical Department members who support it.

—Code Med, Headquarters, U.S. Marine Corps, Washington, DC.

Fleet Hospital Five

In early August a mobilization order went out to Naval Hospital, Portsmouth, VA, to prepare Fleet Hospital 5 (FH-5) for deployment to

the Persian Gulf. Following 2 weeks of intense work, Fleet Hospital 5 deployed to Saudi Arabia and established a 500-bed hospital.

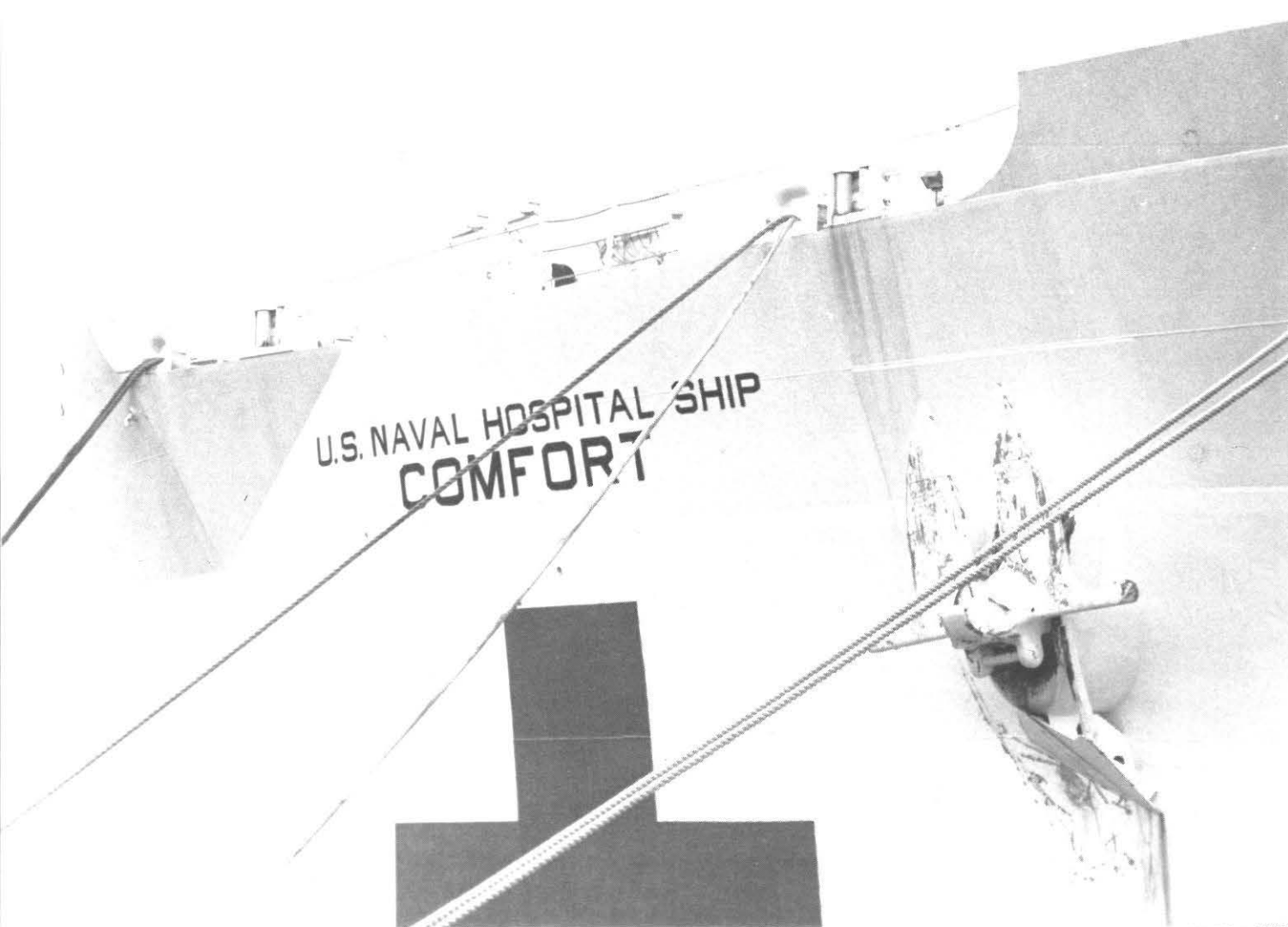
Fleet Hospital 5 currently has over 150 patients on the various wards daily and its surgeons perform from one to eight operations every day. FH-5 is the primary evacuation site for all sick or injured personnel. The hospital ac-

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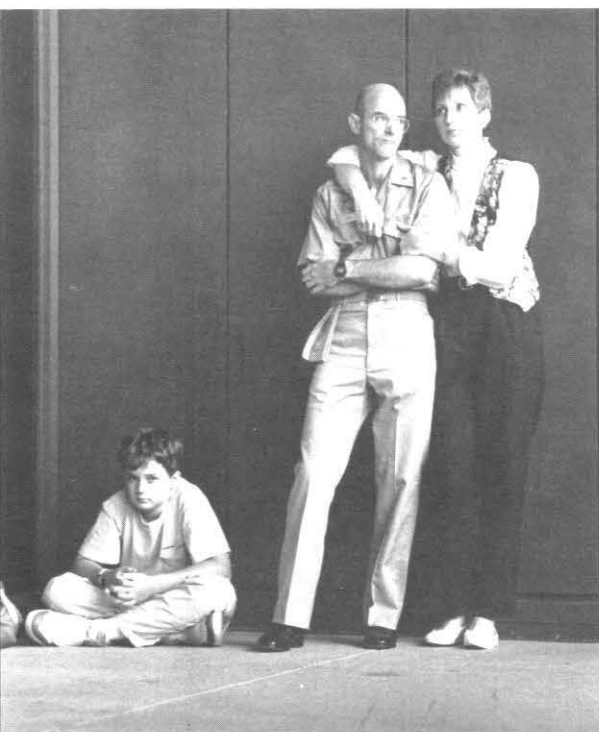


prior to evacuation to an echelon III facility.

And so it was on a weekend in August, when the execute order was received by medical treatment facilities throughout the United States. Personnel traveled to Marine Corps bases on both coasts and Hawaii and reported within 72 hours of notification ready for deployment. In all, over 1,300 personnel responded in support of the Fleet Marine Force for Operation Desert Shield. The deployment of Marine medical assets, with no major problems, is a superb example of the rapid response capability of our Navy-Marine Corps team and of the profes-



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counts for 90 percent of the inpatient medical patients and 80 percent of all outpatient medical care in the area. Routinely, four to eight helicopters land daily to deliver patients.

In the event of hostilities, FH-5 personnel are trained and ready to receive

and treat casualties. Training is a continuous evolution with major emphasis on mass casualties.

FH-5 is currently treating British marines in the local region as well as U.S. Army and Air Force personnel.

—Naval Hospital, Portsmouth, VA.

Bill Fisher, NSHS



USNS *Mercy* and USNS *Comfort*

USNS *Mercy* (T-AH 19) is a Military Sealift Command ship, homeported in Oakland, CA.

USNS *Comfort* (T-AH 20) is homeported in Baltimore, MD. They are each staffed by a crew of approximately 60 civilian mariners.

Mercy last deployed for 4 months in 1987 on a disaster relief mission to the Philippines.

Comfort last deployed on a 1-week training cruise to Norfolk, VA, 16-20 April 1990.

Ship Facts

Overall length	894 feet
Beam	105 feet, 9 inches
Draft	32 feet, 9 inches
Displacement	69,360 long tons
Sustained speed	17.5 knots
Propulsion	single screw, geared steam turbine

- Converted from "San Clemente" class tanker.
- Construction was by modular system (fabrication outside of the ship and lifted into place).*
- USNS *Mercy* and USNS *Comfort* are the only two active hospital ships in the world.

Mission

The ships' missions are to provide acute surgical care, in support of military operations.

The ships are designed to receive and care for combat casualties, then to evacuate them to hospitals which can provide longer term levels of care.

A secondary mission is to provide medical care as part of disaster relief operations.

Capabilities

12	operating rooms
80	intensive care beds
20	recovery beds
280	intermediate care beds
120	light care beds
500	limited care beds
1,000	total beds

*See "Hospital Ships Are Back," *U.S. Navy Medicine*, January-February 1985 and "Hospital Ship: The Next Chapter," *U.S. Navy Medicine*, July-August 1985.

USNS *Mercy* and USNS *Comfort* can:

- Provide surgical and medical care to patients until they are evacuated to other acute care facilities overseas or in the U.S., or they are returned to duty.
- Receive patients from helicopter or boat while anchored, while underway, or while pierside.
- Operate the full Medical Treatment Facility at sea, day and night.
- Receive fuel at sea from other ships.
- Receive supplies and provisions by boat or from helicopters.

Medical Staff

The almost 1,000-member Medical Treatment Facility staff aboard *Comfort* comes almost entirely from the National Naval Medical Center in Bethesda, MD. *Mercy's* crew comes from Naval Hospital, Oakland, CA. All men and women are active duty naval officers and enlisted members.

The medical staff includes medical doctors, dentists, nurses, Medical Service Corps officers (health care administrators), and enlisted hospital corpsmen. Additionally, enlisted men and women from support ratings such as storekeeper, mess specialist, yeoman, personnelman, journalist, and others also serve on the ships.

***Mercy* and *Comfort* meet in the Persian Gulf. Photo by HM2 Thomas C. Balfour.**



Violence in the Emergency Department

LCDR Kathryn L. Hall-Boyer, MC, USN
LCDR William F. Boyer, MC, USNR

Violence within the emergency department (ED) has received attention in the medical literature only in the last two decades. The earliest reports were predominantly in nursing journals and often concluded the staff member was at fault for provoking the assault. The implication of guilt and work involved to document incidents has resulted in significant underreporting.⁽¹⁾

Violence may be secondary to a wide range of conditions.⁽²⁾ Assaults on medical personnel are most common in the ED, psychiatry wards, and in prehospital care.^(1,3-6) This article reviews the medical literature on violence in the ED and describes a method to prepare for managing patients whose behavior is out of control.

Preparation for violent patients should be as thorough as for cardiac arrests.⁽⁷⁾ Studies suggest that trained staffs encounter less violence and injury.⁽⁸⁻¹⁰⁾ Classes should include prevention, recognition and de-escalation, restraint methods with practice drills, weapon control, and debriefing after an incident. Content should emphasize both medical and legal aspects of violent behavior. This article will address each of these components.

The ideal treatment for violence is prevention. Most violence in the ED is due to the patient's fear.⁽²⁾ Patients should be provided realistic estimates of how long they will have to wait and be informed if this changes.⁽¹¹⁾ Anger is less likely if people feel their treatment is "justified, non-arbitrary, and reasonable."⁽¹²⁾ Patients should be told to return to the check-in window if they feel worse or have waited more than a specified amount of time. The same

respect should be given the friends and family waiting for patients.

Recognition and De-escalation

How to recognize a potentially violent individual is well covered in other articles.⁽¹²⁻¹⁴⁾ A history of violence and impulsivity is the best predictor,⁽¹²⁾ but this knowledge is rarely available in the ED. If the medical facility is at an isolated duty station individuals with problem behavior may be known to medical authorities.

Observation of a potentially violent patient may reveal a tense posture, loud or threatening speech, pacing, or evidence of intoxication.^(15,16) The check-in clerk should observe people in the waiting area for these behaviors and alert the triage nurse before violent behavior has a chance to escalate.

Verbal Restraint

The first approach to the violent patient is talking, which may be considered verbal restraint. An offer to help or empathetic statements like "It is hard to wait when you are in pain" may calm the patient and allow him or her to express frustrations in a less aggressive manner. A matter-of-fact statement that certain types of behavior are not allowed may be effective. The staff member should neither be fearful nor overcompensate with an authoritarian attitude, as either may frighten or aggravate the patient.

The patient should be brought to a safe place. The room should have no expensive equipment or potential

weapons, like needles or glass bottles. It is best to interview the patient alone, but help should be close by.(6) Sudden motions should be avoided and it is best not to touch the patient.(18) If this is necessary, as for a physical examination, step-by-step explanations should be offered. The physician should not turn his back on the patient or leave him in an unobserved area.(19) If the patient is particularly threatening, a family or staff member who has good rapport with the patient should be present during the interview.

Physical Restraint

More definitive intervention is sometimes required. Again, a safe area away from medical equipment and potential weapons should be used. The team members should be specially trained, with a designated leader. At least five staff members should participate regardless of the patient's size. Even slightly built patients can be very

powerful. If there is time the team should remove articles of their own clothing that could be dangerous, such as glasses, neckties, and ID badges. One team member should be assigned to each limb and there should be a leader with restraint keys. The leader talks to the patient throughout the procedure. Some patients may be asked to lie down on the gurney as the restraint procedure is described.(20) The patient should be given the explanation that restraints are used to help temporarily control behavior and will be removed as the patient shows more control.

There should be a prearranged signal to begin the restraint. Once the signal is given, the team should move quickly and complete the restraint. Each team member holds his or her assigned limb while the patient is brought face down to the floor. The team leader holds the patient's head to prevent injury. A patient may say "I'll be okay now, let me go" only to use the opportunity to strike out again. All four limbs should initially be restrained. The rule is that

TABLE 1
An Approach to the Differential Diagnosis of Violent Behavior
"S-O-A-P"

<i>Category</i>	<i>Common Findings</i>
S ubstance Abuse (especially alcohol)	Altered vital signs, pupillary findings, alcohol on breath, enlarged, tender liver, ataxia, slurred speech, history of arrests for DUI or possession, medical complications of substance abuse (e.g., hepatitis, gastritis.)
O rganic Brain Disorder (e.g., delirium, dementia, stroke, tumor, subdural hematoma, encephalopathy)	History of significant chronic illness (e.g., neoplasm, COPD, endocrinopathy), treatment with analgesics or anticholinergic compounds, head trauma, behavior change in elderly. Mental status shows impaired short-term memory (e.g., cannot remember three objects for 5 minutes) and decreased attention and concentration (serial 7s, spelling "world" backwards). Disorientation to time, place, or person occurs <i>only</i> if severe.
A ffective Disorder	Depression: tearful, anguished mood, suicidal thoughts, history of insomnia and weight loss, history of treatment with antidepressants. Mania: physically and verbally hyperactive, euphoric, irritable mood, grandiose. History of treatment with lithium.
P schosis or	Auditory hallucinations, delusions (e.g., getting private messages on the radio or TV, others are watching), speech bizarre and difficult to follow (loose associations), history of treatment with antipsychotic medication.
P ersonality Disorder	Depends on type. Common types may be extremely dramatic and emotionally labile, intensely angry (especially at person who has disappointed the patient), with history of dramatic, erratic, self-destructive behavior (e.g., superficial wrist-cutting).

it is easier to remove than apply restraints. Patients at risk of emesis should be restrained prone to reduce the risk of aspiration.

The restraints should be released one at a time as the patient shows better control.⁽¹³⁾ To reduce chances of injury the order of release should be: nondominant arm, opposite leg, dominant arm, remaining leg. Several minutes should be allowed between removal of each restraint to ensure that the patient is in control of his behavior.

Chemical Restraint

Chemical restraints may be used with or instead of physical restraints. The goal is not sedation, but to calm the patient enough to prevent harm and allow proper evaluation. Haloperidol is particularly useful in psychosis and with most types of violent patients.^(21,22) It acts rapidly by oral concentrate, intramuscular (IM), and intravenous (IV) routes.⁽²³⁾ Oral concentrate may have some advantages since it allows the patient to participate in treatment, is rapidly absorbed, impossible to "cheek," and may mitigate against claims that medication was forced.⁽²⁴⁾ The worry that haloperidol lowers the seizure threshold is seldom clinically significant.⁽²⁵⁾ The dosage required varies with the condition being treated. Elderly patients with delirium may require as little as 0.5 mg. Patients with primary psychotic disorders or drug intoxication may require repeated doses of 5-10 mg every 30 to 60 minutes. Droperidol (Inapsine) is closely related to haloperidol. It is more sedating and may have a more rapid onset of action. In some centers droperidol 5 mg IM is standard treatment for acute agitation.⁽²⁷⁾

High potency antipsychotics, such as haloperidol, are associated with a significant incidence of acute dystonic reactions, especially in younger active duty patients.⁽²⁶⁾ These typically present as spasm of muscles of the neck (torticollis), tongue or jaw, or eyes (oculogyric crisis). They can be prevented or treated with diphenhydramine 50 mg IV or IM, or benztropine 1-2 mg PO or IM.

Low potency antipsychotics, such as chlorpromazine (Thorazine) or thioridazine (Mellaril), are less useful. They cause considerably more cardiovascular complications such as hypotension and arrhythmias. They also have significant anticholinergic effects which may increase heart rate, exacerbate urinary retention, inhibit sweating, and worsen some cases of delirium. IM preparations require a painfully large volume of medication and may produce sterile abscesses.

Tardive dyskinesia is extremely unlikely after one or two doses of an antipsychotic. However, some of the patients seen in an ED have had previous antipsychotic treatment and may therefore be at increased risk. Tardive dyskinesia is increasingly the subject of malpractice lawsuits. This should not prevent using these drugs, but care should be taken to prescribe them only for proper, well-documented indications.

Benzodiazepines are also commonly used for violent patients. They are not associated with the motor side effects of antipsychotics, but occasionally produce paradoxical agitation, especially in the presence of CNS damage. They may also cause respiratory depression, particularly if given intravenously. Only lorazepam and midazolam are reliably absorbed with IM administration.⁽²⁸⁾

An antipsychotic and a benzodiazepine, such as haloperidol and lorazepam, are frequently combined. Common starting doses are haloperidol 2-5 mg with lorazepam 1-2 mg. Morphine in 2 mg increments may also be useful, especially if the agitation is due to pain.⁽¹⁶⁾ Barbiturates, such as sodium amytal, 250 mg IM, are used,^(29,30) but are not recommended due to a lower margin of safety.

Medicolegal Considerations in Restraint

Most states have laws which regulate the use of restraints. Military medical facilities are under federal jurisdiction, or if overseas, the laws of the host country may apply. ED staff members should be aware of the applicable laws. It is usually permissible to take necessary steps for the prevention of immediate harm. Restraint should be considered an invasive procedure with similar documentation standards.⁽³⁴⁾ The medical record should reflect the specific behaviors which led to the conclusion of imminent harm. For example, a note such as "patient agitated" is not as helpful as "patient trying to break windows and cut himself on the glass."

Weapons

One study estimated that 4 percent of the patients presenting to a psychiatric emergency room were armed.⁽³⁵⁾ Weapons may also be common at training bases or in medical facilities involved with training exercises. There should be a routine for checking weapons before entering the ED. It is still prudent to ask a patient about weapons prior to interviewing alone. If he admits having a weapon, he should be asked why he felt the need to bring it to the ED.⁽¹³⁾ This allows reassurance and aids the differential diagnosis of antisocial behavior versus paranoid, delusional disorders.

If the patient is unwilling to surrender a weapon the physician should consider calling hospital security or law enforcement officers. Hospital personnel are usually closer by than security officers and able to act before the situation has escalated. If the weapon is a small knife, club, or something similar, a well-trained hospital restraint team may subdue the patient with minimal injury by rushing him with a mattress or another shield.

Most EDs develop a code name like paging "Dr. X" to request security. A panic button to summon security is essential for most large EDs. Staff should not try to stop the armed patient if he or she tries to leave. The police or base security should be immediately notified.

TABLE 2
Organic Causes of Violent Behavior (13,40-43)

CONDITION	VITAL SIGNS				SWEAT- PUPIL		NYSTAGMUS	EVALUATION	CONSIDERATIONS
	BP	P	R	T	ING	SIZE			
TRAUMA									
Acute blood loss	↓	↑			↑			HCT, Type and Cross	Trauma, G.I. bleed
Subacute blood loss		↑						HCT, RBC morphology, orthostatic VS	
Head trauma								Head CT, C-spine xrays	
ENDOCRINE									
DKA	±	↑	↑					Glucose, ketones, ABGs	
Hypoglycemia		↑	±		↑			Glucose	D50
Hyperthyroidism		↑						Reflexes, tremor?	
Hypothyroidism	↓	↓		↓				Reflexes, ECG	
Metabolic								Electrolytes, Ca, Mg, BUN, Creatine	
MEDICATIONS									
Salicylates			↑	↑				ABGs, 6 hour salicylate level	Acetaminophen?
Digoxin								Digoxin level, ECG	Oleander, azalea ingestion
Steroids									Recent dose increase
Anticholinergics	±	↑	±	↑	none	↑			History, OTC meds
SUBSTANCE ABUSE									
ETOH intoxication			↓				horizontal	ETOH level, UR, Calcium oxalate	
ETOH withdrawal	↑	↑		↑	↑			ETOH level, UR, Calcium oxalate	Ethylene glycol
Other sedative/ hypnotics	↑		↓			↓		ETOH level, toxicology screen	
Narcotics			↓			↓*		ETOH level, toxicology screen	
LSD	↑	↑		↑		↑		ETOH level, toxicology screen	
PCP	↑	↑			↑		horiz or vert rotatory	ETOH level, toxicology screen	
Amphetamines	↑	↑	↑	↑		↑		ETOH level, toxicology screen	
Cocaine		↑		↓		↓		ETOH level, toxicology screen	Body packing
Nutmeg		↑		↓		↓		ETOH level, toxicology screen	Eggnog ingestion?
OTHER									
Dehydration	±	↑						Orthostatic VS	DKA
Infection		↑		↑				WBC, LP	Meningitis, encephalitis
Sepsis	↓	↑		±	↑			Blood C&S	
Hypoxia			±			↑		ABG, O2 saturation	Etiology?
Hypertensive encephalopathy	↑							Neurologic & fundoscopic exams	Monitors
Hydrocarbons				↑					History, smell
Intracranial conditions **	±	±	±	±		±		Neurologic & fundoscopic exams Neurologic examination, head CT	Headache
Pain		↑				↑		Talk to patient	

↑ Elevated, increased; ↓ Low, decreased; ± Variable, but often abnormal.

* Meperidine may increase pupil size.

** Hemorrhage, stroke, mass; ? Lateralizing findings on neurologic exam.

Discharge From the ED

The team "medical clearance" is frequently used to describe the often cursory evaluation of agitated or violent patients.(36) Never should more care be given to exclude an organic etiology than with these patients. The medical

differential of violence includes most causes of coma, which underscores the potentially unstable nature of these patients. Table 1 illustrates how simple observations, such as vital signs, may help differentiate various organic causes of violent behavior. An approach to the mental status is

TABLE 3
Prescription and OTC Medications Which May Cause
Delirium, Psychosis, or Hallucinations (44,45)

Anti-Infectives amphotericin B chloramphenicol chloroquine cycloserine dapson & sulphapyridine combination ethionamide isoniazid miridazole nitrofurantoin penicillin (PCN) podophyllin topically procaine PCN quinicrine rifampin sulfonamides thiabendazole	Anticonvulsants (con.) conazepam (rage reaction) ethosuxamide phenobarbital (paradoxical excitation)	Cold and Diet Pills (con.) phenylpropanolamine pseudoephedrine
Anticholinergics antihistamines antipsychotics antropine, homatropine, cyclogel (ophthalmic drops) belladonna, jimsonweed (plant ingestions) benztropine propantheline scopolamine tricyclic antidepressants	Analgesics aspirin indomethacin pentazocine phenylbutazone propoxyphene sulindac (rage reaction)	Hormones ACTH antithyroid meds corticosteroids hypoglycemic agents (hypoglycemia) thyroid hormones
Anticonvulsants carbamazepine	Antihypertensives/Cardiovascular clonidine digoxine disopyramide diuretics (potassium depletion or dehydration) procainamide propranolol mexiletine	Miscellaneous aminocaproic acid asparaginase baclofen benzodiazepines cimetidine disulfiram methotrexate (try folate) methysergide metrizimide
	Anti-Parkinson amantadine bromocriptine levodopa	Withdrawal of: anticonvulsants baclofen barbiturates benzodiazepines levodopa phenylephrine pseudoephedrine tricyclic antidepressants
	Cold and Diet Pills diethypropion ephedrine fenfluramine	

outlined in Table 2. Table 3 summarizes many of the prescription and over-the-counter medications which may precipitate violent outbursts by inducing delirium or psychosis.

The patient's vital signs, circulation to the extremities, and the need for restraints must be continually reassessed. If prolonged restraint is necessary, there should be frequent notes documenting the reasons. A patient who is physically or chemically restrained should preferably have one-on-one observation or at least remain within line of sight. Seclusion rooms are never appropriate prior to a medical assessment because of the possibility of rapid deterioration.

Releasing a violent patient can have serious medical-legal consequences.(7,37-39) Release is possible in specific circumstances and with good documentation. For example, a patient who was violent due to alcohol intoxication may be released if the violent behavior resolves, someone else drives the patient home, and specific followup is arranged. The presence or absence of suicidal or homicidal

intent is a crucial point. A patient who plans to harm a specific victim is a particular legal risk. The Tarasoff decision has been used in such cases to prosecute a physician who releases a patient who then injures someone.(39) Such a patient may be ordered into the hospital or confined for communicating a threat if on active duty, or may be involuntarily committed if a civilian. If the patient is not or cannot be detained he/she should be informed that the intended victim and police will be notified of his/her plan. When possible, it is good practice to call the intended victim in the patient's presence, so there is no uncertainty about what was said.(40)

Debriefing

A debriefing should be held as soon as possible after every episode of violence or restraint. This is especially important if there were any difficulties in the restraint procedure, damage done to the ED, a staff member injured, or if any staff members were against it. Even a routine restraint situation is usually stressful. The group

should support the staff members for what was done right, deal with the fears of those involved, and discuss how to apply the experience to future incidents.

Summary

Violent behavior is commonly encountered in the ED. In order to prevent injury and property damage, the staff should be well prepared. Since violence is often secondary to an underlying condition, whether it is fear, schizophrenia, or a life-threatening medical disorder, the staff should recognize this behavior early. A complete medical evaluation is required to make the correct diagnosis and treat the patient appropriately. When actual violence occurs, the staff should act quickly and confidently to restrain the patient verbally, physically, or chemically. All incidents should be discussed by the staff involved. The experience gained from each event should be used to enhance future staff training and cohesiveness.

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Correction

The May-June 1990 issue of *Navy Medicine* published an article entitled "Medical Coverage of the Physical Readiness Test: A Checklist." The chart, "Checklist for Medical Coverage: The PRT," details various Medical Department duties which are neither prescribed nor required by current directives. Medical Department personnel and Command Fitness Coordinators (CFC) should review the latest physical readiness program directive, OPNAVINST 6110.1D of 18 Jan 1990 for required procedures and standards.

For additional information contact: CAPT W.F. Bina, MC, Director, Occupational Health and Preventive Medicine Division, BUMED, on Autovon 294-1788 or Commercial (202) 653-1788.

Naval Dental Officer Symposium

The 30th Naval Dental Officer Symposium and Luncheon will be held 17-18 Feb 1991 at the Guest Quarters Hotel, East Delaware Place, Chicago, IL.

The 1-day symposium will be held in conjunction with the annual Chicago Midwinter Dental Meeting, one of the largest civilian dental conferences in the nation. The symposium is open to all active duty, selected reserve, and retired dental officers. The agenda will focus on various important topics of interest to all naval dental personnel. The luncheon will follow on 18 Feb.

Active duty and retired personnel interested in attending should contact: CDR David A. Glass, Naval Dental Clinic, NTC Great Lakes, IL 60088. Telephone: Autovon 792-3620, Commercial (708) 688-3620.

Selected reserve and retired reserve dentists are asked to contact: CAPT Steven D. Miller, 10 Phillip Road, Suite 113, Vernon Hills, IL 60061. Telephone: Commercial (708) 367-9330.

Medics Organize

Corpsmen who have served in combat in the Army or the Navy now have an organization all their own. Known as *The National Order of Corpsmen and Combat Medics*, their purpose is to bring combat care providers together, to help them cope with their unique war experiences, and to bring greater recognition for their contributions in battle.

This newly formed fraternity of Army medics and Navy corpsmen came into being through the encouragement of author Craig Roberts while editing his latest book, *Combat Medic—Vietnam*, and First Cavalry Division combat medic Bob "Doc" Bosma. The organization publishes a bimonthly newspaper, and is planning their first convention for August 1991 in San Antonio, TX.

For more information or a membership application call Toll-Free (800) 542-5682, or write The National Order of Corpsmen and Combat Medics, P.O. Box 141, Boonville, MO 65233-0141.

Health Care Coverage for Reservists Called to Active Duty

The Internal Revenue Service (IRS) has given notice that employers must continue health care coverage for called-up reservists and their families, if the reservists so desire and if they are willing to pay the premium for the coverage.

The Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) allows employees who leave their jobs for any reason to continue being covered by their ex-employer's health plan, at their own expense, for up to 18 months. The former employer may end the coverage if the person and his or her family begin coverage under another group health plan.

But the IRS has said that military health benefits (including CHAMPUS [Civilian Health and Medical Program of the Uniformed Services]) available to the families of activated reservists are not a "group health plan" as the IRS code defines it. Therefore, employers may not stop health benefits to reservists called to active duty, or to their families, without their consent.

The IRS ruling will also affect other CHAMPUS-eligible persons who leave their private-sector jobs for any reason and who want to continue being covered by their ex-employer's health plan.

The IRS notice on its ruling appears in Internal Revenue Bulletin 1990-40, published 1 Oct 1990.

CHAMPUS Handbook

The new CHAMPUS (Civilian Health and Medical Program of the Uniformed Services) Handbook has been completely updated. The 140-page book is written in everyday language for service families and their sponsors.

The handbook has the latest information about the basic CHAMPUS program's benefits and procedures. It also discusses the uniformed services' Active Duty Dependents Dental Plan and CHAMPVA (Civilian Health and Medical Program of the Department of Veterans Affairs), and lists military medical facilities worldwide. The 1988 handbook and all previous editions are out-of-date and should be discarded immediately.

The revised edition is being shipped by the printer to the military services' publication distribution centers, to the U.S. Public Health Service, to various Coast Guard facilities, and to the headquarters offices of all CHAMPUS claims processors.

Requests for supplies of the handbook may be forwarded to the appropriate publication distribution centers. Navy requesters should use stock number: SN 0510-LP-206-0400. Other requesters should refer to CHAMPUS Handbook 6010.46-H, dated July 1990, when ordering from their distribution centers.

Individuals who want copies of the new handbook should contact their nearest Health Benefits Advisor.

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